AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A method for analysis comprising:

transmitting electromagnetic radiation through a plurality of metallic islands located on at least one surface of a transparent substrate and said transparent substrate;

~~measuring~~ generating a ~~resultant~~ first optical property measurement of transmitted radiation ~~said plurality of metallic islands on said transparent substrate~~ following passage of said electromagnetic radiation through said metallic islands and through said transparent substrate;

adsorbing a chemical substance onto said plurality of metallic islands ~~so as~~ to produce a chemical substance-metallic islands moiety on said transparent substrate;

transmitting electromagnetic radiation through said chemical substance-metallic islands moiety and said transparent substrate;

~~measuring~~ generating a ~~resultant~~ second optical property measurement of transmitted radiation ~~metallic islands in said chemical substance-metallic islands moiety~~ following passage of said electromagnetic radiation through said chemical substance-metallic islands moiety and said transparent substrate; and

employing said ~~resultant~~ second optical property measurement ~~of said metallic islands in chemical substance-metallic islands moiety~~ and said ~~resultant~~ first optical property measurement ~~of said metallic islands in said plurality of metallic islands so as~~ to provide at least one of a quantitative indication and a qualitative indication of at least one of: said chemical substance-metallic islands moiety, a functionality of said chemical substance-metallic islands moiety, said plurality of metallic islands, a functionality of said plurality of metallic islands, said chemical substance and a functionality of said chemical substance.

2. (Currently Amended) A method according to claim 1, and wherein said adsorbing said chemical substance comprises producing at least one of the following interactions between the chemical substance and said plurality of metallic islands: a hydrogen bond, an ionic bond, a covalent bond, a Van der Waals force, an electrostatic force and a

physical force.

3. (Currently Amended) A method according to claim 1, wherein said transmitting ~~said~~ electromagnetic radiation through said plurality of metallic islands ~~on said transparent substrate~~ comprises transmitting electromagnetic radiation in the ultraviolet/visible/infra-red range.

4. (Currently Amended) A method according to claim 1, and wherein said transmitting ~~said~~ electromagnetic radiation through said plurality of metallic islands ~~on said transparent substrate~~ comprises transmitting electromagnetic radiation in the range of 300-1100 nm.

5. (Currently Amended) A method according to claim 1, and wherein said transmitting ~~said~~ electromagnetic radiation through said chemical substance-metallic islands moiety ~~on said transparent substrate~~ comprises transmitting electromagnetic radiation in the ultraviolet/visible/infra-red range.

6. (Currently Amended) A method according to claim 1, and wherein said transmitting ~~said~~ electromagnetic radiation through said chemical substance-metallic islands moiety ~~on said transparent substrate~~ comprises transmitting electromagnetic radiation in the range of 300-1100 nm.

7. (Currently Amended) A method according to claim 1, and wherein said transmitting ~~said~~ electromagnetic radiation through said plurality of metallic islands ~~on said transparent substrate~~ includes transmitting electromagnetic radiation through said transparent substrate comprising at least one of the following: glass, plastic, polystyrene, a polymeric material, an inorganic oxide, quartz and mica.

8. (Currently Amended) A method according to claim 1, and wherein said transmitting ~~said~~ electromagnetic radiation through said plurality of metallic islands ~~on said transparent substrate~~ includes transmitting electromagnetic radiation through said transparent substrate having a thickness of up to 5 mm.

9. (Currently Amended) A method according to claim 1, and wherein said transmitting ~~said~~ electromagnetic radiation through said plurality of metallic islands ~~on said transparent substrate~~ includes transmitting electromagnetic radiation through metallic islands comprising at least one of the following: gold, silver, copper, titanium, vanadium, chromium, steel, at least one ultra-thin layer of a metal, a binary alloy of the following elements: gold, silver, copper, titanium, vanadium, and chromium; or a ternary alloy of the following elements: gold, silver, copper, titanium, vanadium, and chromium.

10. (Original) A method according to claim 1, and wherein said metallic islands are gold islands.

11. (Currently Amended) A method according to claim 1, and wherein said transmitting ~~said~~ electromagnetic radiation through said plurality of metallic islands ~~on said transparent substrate~~ includes transmitting electromagnetic radiation through metallic islands having a thickness of up to 400 Ångstrom units.

12. (Original) A method according to claim 11, wherein the thickness is between 10 to 100 Ångstrom units.

13. (Currently Amended) A method according to claim 1, and wherein said employing ~~said resultant optical property of said plurality of metallic islands~~ comprises measuring a change in a surface plasmon absorbance of said plurality of metallic islands.

14. (Currently Amended) A method according to claim 1, and wherein each of said ~~resultant~~ first optical property measurement and said second optical property measurement ~~of said plurality of metallic islands~~ comprises a peak of maximal absorbance.

15. (Cancelled)

16. (Currently Amended) A method according to claim 1, and wherein each of said ~~resultant~~ first optical property measurement and said second optical property measurement ~~of said chemical substance metallic islands moiety~~ comprises an absorbance of said chemical substance-metallic islands moiety at a specific wavelength.

17. (Currently Amended) A method according to claim 1, and wherein each of said ~~measuring~~ generating a first optical property measurement and said generating a ~~resultant~~ second optical property measurement ~~of said chemical substance metallic islands moiety on said transparent substrate~~ comprises performing real-time measurements ~~of said optical property of said chemical substance metallic islands moiety~~.

18. (Currently Amended) A method according to claim 1, and wherein said employing said ~~resultant~~ second optical property measurement ~~of said chemical substance metallic islands moiety~~ and said ~~resultant~~ first optical property measurement ~~of said plurality of metallic islands~~ comprises comparing said ~~resultant~~ second optical property measurement ~~of said chemical substance metallic islands moiety~~ and said ~~resultant~~ first optical property measurement ~~of said plurality of metallic islands~~.

19. (Currently Amended) A method according to claim 1, and wherein each of said ~~measuring~~ generating a first optical property measurement and said generating a ~~resultant~~ second optical property measurement ~~of said chemical substance metallic islands moiety on said transparent substrate~~ comprises performing continuous measurements ~~of said optical property of metallic islands in said chemical substance metallic islands moiety~~.

20. (Currently Amended) A method according to claim 1, and wherein each of said ~~measuring~~ generating a first optical property measurement and said generating a ~~resultant~~ second optical property measurement ~~of said chemical substance metallic islands moiety on said transparent substrate~~ comprises performing kinetic monitoring ~~of said resultant optical property of metallic islands in said chemical substance metallic islands moiety~~.

21. (Original) A method according to claim 1, and further comprising producing the plurality of metallic islands on the transparent substrate.

22. (Currently Amended) A method according to ~~claim 22,~~ claim 21 and wherein said producing said plurality of metallic islands includes producing said plurality of metallic islands from at least one of the following: gold, silver, copper, titanium, vanadium, chromium, steel, at least one ultra-thin layer of a metal, a binary alloy of the following elements: gold, silver, copper, titanium, vanadium, and chromium; or a ternary alloy of the following elements: gold, silver, copper, titanium, vanadium, and chromium.

23. (Currently Amended) A method according to claim 21 and wherein said producing said plurality of metallic islands comprises evaporating said plurality of metallic islands.

24. (Currently Amended) A method according to claim 21 and wherein said producing said plurality of metallic islands comprises sputtering said plurality of metallic islands.

25. (Currently Amended) A method according to claim 21 and wherein said producing said plurality of metallic islands comprises electroless deposition of said plurality of metallic islands.

26. (Currently Amended) A method according to claim 21 and wherein said producing said plurality of metallic islands comprises electrolytic deposition of said plurality of metallic islands.

27. (Currently Amended) A method according to claim 21 and wherein said producing said plurality of metallic islands comprises hot-melt deposition of said plurality of metallic islands.

28. (Original) A method according to claim 1, and further comprising annealing said plurality of metallic islands on said transparent substrate.

29. (Currently Amended) A method according to claim 28, wherein said annealing is performed prior to said adsorbing said chemical substance onto said plurality of metallic islands.

30. (Currently Amended) A method according to claim ~~29~~ 28 and wherein said annealing said plurality of metallic islands on said transparent substrate comprises heating said plurality of metallic islands on said transparent substrate for up to 24 hours at up to 400 °C.

31. (Currently Amended) A method according to claim ~~30~~ 28 and wherein said annealing said plurality of metallic islands on said transparent substrate comprises heating said plurality of metallic islands on said transparent substrate for up to 4 hours at up to 350 °C.

32. (Currently Amended) A method for analysis comprising:

producing a plurality of metallic islands on an intermediate layer on a transparent substrate;

transmitting electromagnetic radiation through said plurality of metallic islands ~~on said intermediate layer on~~ and said transparent substrate;

~~measuring~~ generating a ~~resultant~~ first optical property measurement of transmitted radiation ~~said plurality of metallic islands~~ following passage of said electromagnetic radiation through said metallic islands and through said transparent substrate;

adsorbing a chemical substance onto said plurality of metallic islands ~~so as~~ to produce a chemical substance-metallic islands moiety on said intermediate layer on said transparent substrate;

transmitting electromagnetic radiation through said chemical substance-metallic islands moiety and said transparent substrate;

~~measuring~~ generating a ~~resultant~~ second optical property measurement of transmitted radiation ~~metallic islands in said chemical substance-metallic islands moiety~~ following passage of said electromagnetic radiation through said chemical substance-

metallic islands moiety and said transparent substrate; and

employing said ~~resultant~~ second optical property measurement ~~said metallic islands in said chemical substance metallic islands moiety~~ and said ~~resultant~~ first optical property measurement ~~of said plurality of metallic islands so as~~ to provide at least one of a quantitative indication and a qualitative indication of at least one of: said chemical substance-metallic islands moiety, a functionality of said chemical substance-metallic islands moiety, said plurality of metallic islands, a functionality of said plurality of metallic islands, said chemical substance and a functionality of said chemical substance.

33. (Original) A method according to claim 32 and wherein said intermediate layer comprises at least one metal oxide.

34. (Original) A method according to claim 33 and wherein said at least one metallic oxide comprises at least one of the following: chromium oxide, titanium oxide, nickel oxide, lead oxide and tin oxide.

35. (Original) A method according to claim 32 and wherein said intermediate layer comprises a metal.

36. (Original) A method according to claim 32 and wherein said intermediate layer comprises at least one of a nitrogen containing moiety, a sulfur containing moiety and an inorganic hydrogen-containing moiety.

37. (Original) A method according to claim 32 and wherein said intermediate layer comprises at least one of the following chemical groups: sulfhydryl, thiocyanate, thiol, sulfide, disulfide and amine.

38. (Original) A method according to claim 32 and wherein said intermediate layer comprises an organic layer.

39. (Currently Amended) A method according to claim 32, and wherein said adsorbing

said chemical substance comprises producing at least one of the following interactions between the chemical substance and said plurality of metallic islands: a hydrogen bond, an ionic bond, a covalent bond, a Van der Waals force, an electrostatic force and a physical force.

40. (Currently Amended) A method according to claim 32, wherein said transmitting ~~said~~ electromagnetic radiation through said plurality of metallic islands ~~on said transparent substrate~~ comprises transmitting electromagnetic radiation in the ultraviolet/visible/infra-red range.

41. (Currently Amended) A method according to claim 32, and wherein said transmitting ~~said~~ electromagnetic radiation through said plurality of metallic islands ~~on said transparent substrate~~ comprises transmitting electromagnetic radiation in the range of 300-1100 nm.

42. (Currently Amended) A method according to claim 32, and wherein said transmitting ~~said~~ electromagnetic radiation through said chemical substance-metallic islands moiety ~~on said transparent substrate~~ comprises transmitting electromagnetic radiation in the ultraviolet/visible/infra-red range.

43. (Currently Amended) A method according to claim 32, and wherein said transmitting ~~said~~ electromagnetic radiation through said chemical substance-metallic islands moiety ~~on said transparent substrate~~ comprises transmitting electromagnetic radiation in the range of 300-1100 nm.

44. (Currently Amended) A method according to claim 32, and wherein said transmitting ~~said~~ electromagnetic radiation through said plurality of metallic islands ~~on said transparent substrate~~ includes transmitting electromagnetic radiation through said transparent substrate comprising at least one of the following: glass, plastic, polystyrene, a polymeric material, an inorganic oxide, quartz and mica.

45. (Currently Amended) A method according to claim 32, and wherein said

transmitting ~~said~~ electromagnetic radiation through said plurality of metallic islands ~~on said transparent substrate~~ includes transmitting electromagnetic radiation through said transparent substrate having a thickness of up to 5 mm.

46. (Currently Amended) A method according to claim 32, and wherein said transmitting ~~said~~ electromagnetic radiation through said plurality of metallic islands ~~on said transparent substrate~~ includes transmitting electromagnetic radiation through metallic islands comprising at least one of the following: gold, silver, copper, titanium, vanadium, chromium, steel, at least one ultra-thin layer of a metal, a binary alloy of the following elements: gold, silver, copper, titanium, vanadium, and chromium; or a ternary alloy of the following elements: gold, silver, copper, titanium, vanadium, and chromium.

47. (Original) A method according to claim 32, and wherein said metallic islands are gold islands.

48. (Currently Amended) A method according to claim 32, and wherein said transmitting ~~said~~ electromagnetic radiation through said plurality of metallic islands ~~on said transparent substrate~~ includes transmitting electromagnetic radiation through metallic islands having a thickness of up to 400 Ångstrom units.

49. (Original) A method according to claim 48, wherein the thickness is between 10 to 100 Ångstrom units.

50. (Currently Amended) A method according to claim 32, and wherein said employing ~~said resultant optical property of said plurality of metallic islands~~ comprises measuring a change in a surface plasmon absorbance of said plurality of metallic islands.

51. (Currently Amended) A method according to claim 32, and wherein each of said ~~resultant~~ first optical property measurement and said second optical property measurement ~~of said plurality of metallic islands~~ comprises a peak of maximal absorbance.

52. (Cancelled)

53. (Currently Amended) A method according to claim 32, and wherein each of said ~~resultant~~ first optical property measurement and said second optical property measurement ~~of said chemical substance-metallic islands moiety~~ comprises an absorbance of said chemical substance-metallic islands moiety at a specific wavelength.

54. (Currently Amended) A method according to claim 32, and wherein each of said ~~measuring~~ generating a first optical property measurement and said generating a ~~resultant~~ second optical property measurement ~~of said chemical substance-metallic islands moiety on said transparent substrate~~ comprises performing real-time measurements ~~of said optical property of said chemical substance-metallic islands moiety~~.

55. (Currently Amended) A method according to claim 32, and wherein said employing ~~said resultant optical property of said chemical substance-metallic islands moiety and said resultant optical property of said plurality of metallic islands~~ comprises comparing said ~~resultant~~ second optical property measurement ~~of said chemical substance-metallic islands moiety~~ and said ~~resultant~~ first optical property measurement ~~of said plurality of metallic islands~~.

56. (Currently Amended) A method according to claim 32, and wherein each of said ~~measuring~~ generating a first optical property measurement and said generating a ~~resultant~~ second optical property measurement ~~of said chemical substance-metallic islands moiety on said transparent substrate of said chemical substance-metallic islands moiety~~ comprises performing continuous measurements ~~of said optical property of said chemical substance-metallic islands moiety~~.

57. (Currently Amended) A method according to claim 32, and wherein each of said ~~measuring~~ generating a first optical property measurement and said generating a ~~resultant~~ second optical property measurement ~~of said chemical substance-metallic~~

~~islands moiety on said transparent substrate~~ comprises performing kinetic monitoring ~~of said resultant optical property of said chemical substance metallic islands moiety~~.

58. (Original) A method according to claim 32, and further comprising producing the plurality of metallic islands on the transparent substrate.

59. (Currently Amended) A method according to ~~claim 59~~ claim 58, and wherein said producing said plurality of metallic islands includes producing said plurality of metallic islands from at least one of the following: gold, silver, copper, titanium, vanadium, chromium, steel, at least one ultra-thin layer of a metal, a binary alloy of the following elements: gold, silver, copper, titanium, vanadium, and chromium; or a ternary alloy of the following elements: gold, silver, copper, titanium, vanadium, and chromium.

60. (Currently Amended) A method according to claim 58 and wherein said producing said plurality of metallic islands comprises evaporating said plurality of metallic islands.

61. (Currently Amended) A method according to claim 58 and wherein said producing said plurality of metallic islands comprises sputtering said plurality of metallic islands.

62. (Currently Amended) A method according to claim 58 and wherein said producing said plurality of metallic islands comprises electroless deposition of said plurality of metallic islands.

63. (Currently Amended) A method according to claim 58 and wherein said producing said plurality of metallic islands comprises electrolytic deposition of said plurality of metallic islands.

64. (Currently Amended) A method according to claim 58 and wherein said producing said plurality of metallic islands comprises hot-melt deposition of said plurality of metallic islands.

65. (Original) A method according to claim 32, and further comprising annealing said plurality of metallic islands on said transparent substrate.

66. (Currently Amended) A method according to claim 65, wherein said annealing is performed prior to said adsorbing said chemical substance onto said plurality of metallic islands.

67. (Currently Amended) A method according to claim ~~66~~ 65 and wherein said annealing said plurality of metallic islands on said transparent substrate comprises heating said plurality of metallic islands on said transparent substrate for up to 24 hours at up to 400 °C.

68. (Currently Amended) A method according to claim ~~67~~ 66 and wherein said annealing said plurality of metallic islands on said transparent substrate comprises heating said plurality of metallic islands on said transparent substrate for up to 4 hours at up to 350 °C.

69-102. (Cancelled)

103. (Currently Amended) Apparatus for analysis comprising:

an adsorption enabling element operative to enable adsorption of a chemical substance onto a plurality of metallic islands on a transparent substrate ~~so as~~ to produce a chemical substance-metallic islands moiety;

a transmitter operative to transmit electromagnetic radiation through said plurality of metallic islands and said transparent substrate[[;]] and which is further operative to transmit electromagnetic radiation through said chemical substance-metallic islands moiety and said transparent substrate;

a detector adapted to ~~detect a resultant~~ generate a first optical property measurement of said plurality of metallic islands, and further configured to ~~detect a resultant~~ generate a second optical property measurement of metallic islands in said chemical substance-metallic islands moiety; and

a processor operative to employ said ~~resultant~~ first optical property

measurement ~~of said metallic islands in said chemical substance-metallic islands moiety~~ and said ~~resultant~~ second optical property measurement ~~of said plurality of metallic islands so as~~ to provide at least one of a quantitative indication and a qualitative indication of at least one of: said chemical substance-metallic islands moiety, a functionality of said chemical substance-metallic islands moiety, said plurality of metallic islands, a functionality of said plurality of metallic islands, said chemical substance and a functionality of said chemical substance.

104. (Original) Apparatus according to claim 103, and wherein said adsorption enabling element is operative to produce at least one of the following interactions between the chemical substance and said plurality of metallic islands: a hydrogen bond, an ionic bond, a covalent bond, a Van der Waals force, an electrostatic force and a physical force.

105. (Original) Apparatus according to claim 103, and wherein said electromagnetic radiation comprises electromagnetic radiation in the ultraviolet/visible/infra-red range.

106. (Original) Apparatus according to claim 103, and wherein said electromagnetic radiation comprises electromagnetic radiation in the range of 300-1100 nm.

107. (Original) Apparatus according to claim 103, and wherein said transparent substrate includes at least one of the following: glass, plastic, polystyrene, a polymeric material, an inorganic oxide, quartz and mica.

108. (Original) Apparatus according to claim 103, and wherein said transparent substrate has a thickness of up to 5 mm.

109. (Original) Apparatus according to claim 103, and wherein said plurality of metallic islands includes at least one of the following: gold, silver, copper, titanium, vanadium, chromium, steel, at least one ultra-thin layer of a metal, a binary alloy of the following elements: gold, silver, copper, titanium, vanadium, and chromium; or a ternary alloy of the following elements: gold, silver, copper, titanium, vanadium, and chromium.

110. (Original) Apparatus according to claim 103, and wherein said metallic islands are gold islands.

111. (Original) Apparatus according to claim 103, and wherein said metallic islands have a thickness of up to 400 Ångstrom units.

112. (Original) Apparatus according to claim 111, and wherein the thickness is between 10 to 100 Ångstrom units.

113. (Currently Amended) Apparatus according to claim 103, and wherein said ~~resultant~~ second optical property measurement ~~of said plurality of metallic islands~~ comprises a change in a surface plasmon absorbance of said plurality of metallic islands.

114. (Currently Amended) Apparatus according to claim 103, and wherein each of said ~~resultant~~ first optical property measurement and said second optical property measurement ~~of said plurality of metallic islands~~ comprises a peak of maximal absorbance.

115. (Cancelled)

116. (Currently Amended) Apparatus according to claim 103, and wherein each of said ~~resultant~~ first optical property measurement and said second optical property measurement ~~of said chemical substance-metallic islands moiety~~ comprises an absorbance of said chemical substance-metallic islands moiety at a specific wavelength.

117. (Currently Amended) Apparatus according to claim 103, and wherein said detector is further operative to perform real-time measurements ~~of said optical property of said chemical substance-metallic islands moiety~~.

118. (Currently Amended) Apparatus according to claim 103, and wherein said processor is further operative to compare said ~~resultant~~ first optical property

measurement ~~of said chemical substance metallic islands moiety~~ and said ~~resultant~~ second optical property measurement ~~of said plurality of metallic islands~~.

119. (Currently Amended) Apparatus according to claim 103, and wherein said detector is further configured to perform continuous measurements ~~of said optical property of said chemical substance metallic islands moiety~~.

120. (Currently Amended) Apparatus according to claim 103, and wherein said detector is further configured to perform kinetic monitoring ~~of said resultant optical property of said chemical substance metallic islands moiety~~.

121. (Original) Apparatus according to claim 103, and further comprising a metal deposition element operative to produce the plurality of metallic islands on the transparent substrate.

122. (Original) Apparatus according to claim 121, and wherein said metal deposition element is operative to produce said plurality of metallic islands from at least one of the following: gold, silver, copper, titanium, vanadium, chromium, steel, at least one ultra-thin layer of a metal, a binary alloy of the following elements: gold, silver, copper, titanium, vanadium, and chromium; or a ternary alloy of the following elements: gold, silver, copper, titanium, vanadium, and chromium.

123. (Original) Apparatus according to claim 121 and wherein said metal deposition element is operative to evaporate said plurality of metallic islands.

124. (Original) Apparatus according to claim 121 and wherein said metal deposition element is operative to sputter said plurality of metallic islands.

125. (Original) Apparatus according to claim 121 and wherein said metal deposition element is operative to deposit by electroless deposition said plurality of metallic islands.

126. (Original) Apparatus according to claim 121 and wherein said metal deposition element is operative to deposit by electrolytic deposition said plurality of metallic islands.

127. (Original) Apparatus according to claim 121 and wherein said metal deposition element is operative to deposit by a hot-melt deposition said plurality of metallic islands.

128. (Original) Apparatus according to claim 121, and further comprising a heating element operative to anneal said plurality of metallic islands on said transparent substrate.

129. (Original) Apparatus according to claim 121, and wherein said heating element is operative to heat said plurality of metallic islands for up to 24 hours at up to 400 °C.

130. (Original) Apparatus according to claim 129, and wherein said heating element is operative to heat said plurality of metallic islands for up to 4 hours at up to 350 °C.

131. (Original) Apparatus according to claim 121, and wherein said adsorption enabling element is further configured to enable adsorption of an intermediate layer on said transparent substrate.

132. (Original) Apparatus according to claim 131 and wherein said intermediate layer comprises at least one metal oxide.

133. (Original) Apparatus according to claim 131 and wherein said at least one metallic oxide comprises at least one of the following: chromium oxide, titanium oxide, nickel oxide, lead oxide and tin oxide.

134. (Original) Apparatus according to claim 133 and wherein said intermediate layer comprises a metal.

135. (Original) Apparatus according to claim 131 and wherein said intermediate layer comprises at least one of a nitrogen containing moiety, a sulfur containing moiety and an inorganic hydrogen-containing moiety.

136. (Original) Apparatus according to claim 135 and wherein said intermediate layer comprises at least one of the following chemical groups: sulfhydryl, thiocyanate, thiol, sulfide, disulfide and amine.

137. (Original) Apparatus according to claim 131 and wherein said intermediate layer comprises an organic layer.

138-175. (Cancelled)

176. (Currently Amended) A kit for analysis comprising:

a plurality of metallic islands on a transparent substrate;

a transmitter configured to transmit electromagnetic radiation through said plurality of metallic islands ~~on~~ and said transparent substrate, and further configured to transmit electromagnetic radiation through a chemical substance-metallic islands moiety formed on said transparent substrate and said transparent substrate;

a detector adapted to ~~detect a resultant~~ generate a first optical property measurement of said plurality of metallic islands, and further configured to ~~detect a resultant~~ generate a second optical property measurement of metallic islands in said chemical substance-metallic islands moiety; and

a processor configured to employ said ~~resultant~~ first optical property measurement ~~of said metallic islands in chemical substance-metallic islands moiety with~~ and ~~resultant~~ said second optical property measurement ~~of said plurality of metallic islands so as~~ to provide at least one of a quantitative indication and a qualitative indication of at least one of: said chemical substance-metallic islands moiety, a functionality of said chemical substance-metallic islands moiety, said plurality of metallic islands, a functionality of said plurality of metallic islands, said chemical substance and a functionality of said chemical substance.

177. (Cancelled)

178. (Currently Amended) An optical sensor for analysis comprising:

a plurality of metallic islands on a transparent substrate;

a transmitter configured to transmit electromagnetic radiation through said plurality of metallic islands ~~on~~ and said transparent substrate, and further configured to transmit electromagnetic radiation through a chemical substance-metallic islands moiety formed on said transparent substrate and said transparent substrate;

a detector adapted to ~~detect a resultant~~ generate a first optical property measurement of said plurality of metallic islands, and further configured to ~~detect a resultant~~ generate a second optical property measurement of metallic islands in said chemical substance-metallic islands moiety; and

a processor configured to employ said ~~resultant~~ first optical property measurement ~~of said metallic islands in chemical substance-metallic islands moiety with~~ and ~~resultant~~ said second optical property measurement ~~of said plurality of metallic islands so as~~ to provide at least one of a quantitative indication and a qualitative indication of at least one of: said chemical substance-metallic islands moiety, a functionality of said chemical substance-metallic islands moiety, said plurality of metallic islands, a functionality of said plurality of metallic islands, said chemical substance and a functionality of said chemical substance.

179-181. (Cancelled)

182. (New) A method for analysis comprising:

adsorbing a chemical substance onto a plurality of metallic islands located on at least one surface of a transparent substrate to produce a chemical substance-metallic islands moiety on said at least one surface of said transparent substrate;

transmitting electromagnetic radiation through said chemical substance-metallic islands moiety and said transparent substrate; and

generating an optical property measurement of transmitted radiation following passage of said electromagnetic radiation through said chemical substance-

metallic islands moiety and said transparent substrate to provide at least one parameter relating to said chemical substance.

183. (New) A method according to claim 182, and wherein said adsorbing a chemical substance comprises producing at least one of the following interactions between the chemical substance and said plurality of metallic islands: a hydrogen bond, an ionic bond, a covalent bond, a Van der Waals force, an electrostatic force and a physical force.

184. (New) A method according to claim 182, wherein said transmitting electromagnetic radiation comprises transmitting electromagnetic radiation in the ultraviolet/visible/infra-red range.

185. (New) A method according to claim 182, and wherein said transmitting electromagnetic radiation comprises transmitting electromagnetic radiation in the range of 300-1100 nm.

186. (New) A method according to claim 182, and wherein said transmitting electromagnetic radiation includes transmitting electromagnetic radiation through said transparent substrate comprising at least one of the following: glass, plastic, polystyrene, a polymeric material, an inorganic oxide, quartz and mica.

187. (New) A method according to claim 182, and wherein said transmitting electromagnetic radiation includes transmitting electromagnetic radiation through said transparent substrate having a thickness of up to 5 mm.

188. (New) A method according to claim 182, and wherein said transmitting electromagnetic radiation includes transmitting electromagnetic radiation through metallic islands comprising at least one of the following: gold, silver, copper, titanium, vanadium, chromium, steel, at least one ultra-thin layer of a metal, a binary alloy of the following elements: gold, silver, copper, titanium, vanadium, and chromium; or a ternary alloy of the following elements: gold, silver, copper, titanium, vanadium, and

chromium.

189. (New) A method according to claim 182, and wherein said metallic islands are gold islands.

190. (New) A method according to claim 182, and wherein said transmitting electromagnetic radiation includes transmitting electromagnetic radiation through metallic islands having a thickness of up to 400 Ångstrom units.

191. (New) A method according to claim 190, wherein the thickness is between 10 to 100 Ångstrom units.

192. (New) A method according to claim 182, and wherein said optical property measurement comprises measuring a surface plasmon absorbance of said plurality of metallic islands.

193. (New) A method according to claim 182, and wherein said optical property measurement comprises a peak of maximal absorbance.

194. (New) A method according to claim 182, and wherein said optical property measurement comprises an absorbance of said chemical substance-metallic islands moiety at a specific wavelength.

195. (New) A method according to claim 182, and wherein said generating an optical property measurement comprises performing real-time measurements.

196. (New) A method according to claim 182, and wherein said generating an optical property measurement comprises performing continuous measurements.

197. (New) A method according to claim 182, and wherein said generating an optical property measurement comprises performing kinetic monitoring.

198. (New) A method according to claim 182, and further comprising producing the plurality of metallic islands on the transparent substrate.

199. (New) A method according to claim 198 and wherein producing said plurality of metallic islands includes producing said plurality of metallic islands from at least one of the following: gold, silver, copper, titanium, vanadium, chromium, steel, at least one ultra-thin layer of a metal, a binary alloy of the following elements: gold, silver, copper, titanium, vanadium, and chromium; or a ternary alloy of the following elements: gold, silver, copper, titanium, vanadium, and chromium.

200. (New) A method according to claim 198 and wherein producing said plurality of metallic islands comprises evaporating said plurality of metallic islands.

201. (New) A method according to claim 198 and wherein producing said plurality of metallic islands comprises sputtering said plurality of metallic islands.

202. (New) A method according to claim 198 and wherein producing said plurality of metallic islands comprises electroless deposition of said plurality of metallic islands.

203. (New) A method according to claim 198 and wherein producing said plurality of metallic islands comprises electrolytic deposition of said plurality of metallic islands.

204. (New) A method according to claim 198 and wherein producing said plurality of metallic islands comprises hot-melt deposition of said plurality of metallic islands.

205. (New) A method according to claim 182, and further comprising annealing said plurality of metallic islands on said transparent substrate.

206. (New) A method according to claim 205, wherein said annealing is performed prior to adsorbing said chemical substance onto said plurality of metallic islands.

207. (New) A method according to claim 206 wherein annealing said plurality of

metallic islands on said transparent substrate comprises heating said plurality of metallic islands on said transparent substrate for up to 24 hours at up to 400 °C.

208. (New) A method according to claim 207 wherein annealing said plurality of metallic islands on said transparent substrate comprises heating said plurality of metallic islands on said transparent substrate for up to 4 hours at up to 350 °C.